\_\_\_\_\_\_

Sequence Listing was accepted.

If you need help call the Patent Electronic Business Center at (866) 217-9197 (toll free).

Reviewer: markspencer

Timestamp: [year=2008; month=9; day=18; hr=15; min=4; sec=12; ms=908; ]

\_\_\_\_\_\_

## Validated By CRFValidator v 1.0.3

Application No: 10552156 Version No: 2.0

Input Set:

Output Set:

**Started:** 2008-08-19 14:32:34.739

**Finished:** 2008-08-19 14:32:47.152

**Elapsed:** 0 hr(s) 0 min(s) 12 sec(s) 413 ms

Total Warnings: 0

Total Errors: 0

No. of SeqIDs Defined: 319

Actual SeqID Count: 319

## SEQUENCE LISTING

<110>	InterCell AG Meinke, Pressbaum Nagy, Eszter Hanner, Markus Dewasthaly, Sailesh Schneider, Ulrike				
<120>	S. Pneumoniae Antigens				
<130>	05-747				
	10552156 2005-10-11				
	PCT/EP2004/003984 2004-04-15				
	EP 03450087.6 2003-04-15				
<160>	319				
<170>	PatentIn version 3.3				
<211> <212>	1 366 DNA Streptococcus pneumoniae				
<400> atgtcta	1 aaaa atattgtaca attgaataat t	cttttattc	aaaatgaata	ccaacgtcgt	60
cgctac	ctga tgaaagaacg acaaaaacgg a	aatcgtttta	tgggaggggt	attgattttg	120
attatg	ctat tatttatctt gccaactttt a	aatttagcgc	agagttatca	gcaattactc	180
caaaga	cgtc agcaattagc agacttgcaa a	actcagtatc	aaactttgag	tgatgaaaag	240
gataag	gaga cagcatttgc taccaagttg a	aaagatgaag	attatgctgc	taaatataca	300
cgagcg	aagt actattattc taagtcgagg g	gaaaaagttt	atacgattcc	tgacttgctt	360
caaagg					366
<210><211><211><212><213>	2 2631 DNA Streptococcus pneumoniae				
<400> atggata	2 aaga aaaaattatt attgattgat g	gggtcttctg	tagcttttcg	ggcgtttttt	60
gcgctgt	tatc agcagttgga ccgttttaag a	aatgtggctg	gtttgcatac	caatgcgatt	120

tatggt	tttc	agttgatgtt	gagtcattta	ttggagcggg	ttgagccgag	tcatattttg	180	
gtggct	tttg	atgcgggaaa	gacgaccttc	cggacagaga	tgtatgcgga	ctataagggt	240	
ggtcgg	gcca	agactcctga	tgagtttcgt	gagcaatttc	ctttcattcg	tgagttgctg	300	
gatcat	atgg	ggattcgtca	ctatgatctg	gctcagtatg	aggcggatga	catcattggg	360	
acgctg	gata	agctagcaga	gcaggatggt	tttgatatta	ctattgtcag	tggggacaag	420	
gatttg	attc	agctgacgga	tgagcatacg	gtggttgaaa	tttccaagaa	aggtgtggct	480	
gagttt	gagg	cctttacgcc	agattacctc	atggaagaaa	tgggcctcac	accagctcag	540	
tttatc	gatc	tcaaggcgct	catgggtgat	aagtcggata	atatccctgg	ggtgaccaaa	600	
gtcggt	gaaa	agacgggtat	taagctcttg	ctggagcatg	gttcgcttga	ggggatttat	660	
gaaaat	attg	atggaatgaa	gacttctaag	atgaaggaaa	atctcatcaa	tgacaaggaa	720	
caggcc	tttt	tgtctaaaac	actagcgacc	attgatacca	aggcaccgat	tgcgattggt	780	
ttagag	gact	tggtctatag	tggtccagat	gttgaaaatc	ttgggaaatt	ctacgatgag	840	
atgggc	ttca	aacagctaaa	gcaggcttta	aatgtgtcgt	cagctgatgt	gtctgagagt	900	
ttggati	ttta	ctattgttga	ccaaatcagt	caagatatgc	tgagtgaaga	gtctatcttc	960	
cacttt	gagc	tttttggtga	gaattaccat	acggataatt	tggttggatt	tgtctggtct	1020	
tgtggg	gata	agctctatgc	cacagacaag	cttgagctgt	tgcaagaccc	gattttcaag	1080	
gatttc	ttag	aaaaaacatc	tctgagagtt	tatgacttta	agaaggttaa	agttcttttg	1140	
caacgt	tttg	gtgtggattt	gcaggcgcct	gcttttgaca	tccgtttggc	taaatacctc	1200	
ctttcg	actg	tggaggacaa	tgaaattgcg	accatcgcta	gtctttatgg	tcagacttac	1260	
ttggtt	gatg	atgaaacttt	ctacggtaag	ggtgttaaaa	aggccattcc	tgaacgtgag	1320	
aaattc	ttgg	aacacttagc	ttgtaaactt	gctgttttgg	tagaaacaga	gcctatttta	1380	
cttgaa	aaac	tcagcgaaaa	tgggcaatta	gagcttcttt	atgatatgga	gcaacctctg	1440	
gctttt	gtcc	ttgccaagat	ggaaattgct	gggattatgg	tcaagaaaga	gaccttgctt	1500	
gagatg	cagg	ctgaaaatga	gcttgtcatt	gaaaaactga	ctcaagagat	ttacgagctg	1560	
gctggt	gagg	agtttaatgt	caactcgcct	aagcagttgg	gcgtgcttct	ctttgagaaa	1620	
ttggga	cttc	ctctagaata	cactaagaaa	accaagacag	gttattcgac	agcagtggat	1680	
gtttta	gagc	gtctcgctcc	tattgctccg	attgttaaga	aaatcctgga	ttaccgtcaa	1740	
attgct	aaga	ttcaatctac	ttatgtaatt	ggcttgcagg	actggatttt	ggctgatgga	1800	

aagattcata ct	tcgctatgt	gcaggatttg	acccagaccg	ggcgtttgtc	tagtgtggat	1860
ccaaacttgc aa	aaatattcc	tgcccgattg	gaacaggggc	gcttgattcg	gaaggctttt	1920
gtgccagagt go	ggaggatag	tgtgctactc	agctctgact	attcacagat	tgaattgcgc	1980
gttttggcgc at	tatttctaa	ggatgagcac	ttgattaagg	ccttccaaga	gggggcagat	2040
atccatactt co	gacagccat	gcgggtcttt	ggcattgagc	gtcctgatga	tgtgactgca	2100
aacgaccgtc go	caatgccaa	ggcagttaac	tttggagtgg	tttatgggat	ttcagacttt	2160
ggcttgtcta at	taatttggg	aattagtcgt	aaggaagcca	aagcctacat	tgatacctac	2220
tttgaacgtt tt	tccaggtat	taaaaactac	atggatgaag	tggtgcggga	ggcgcgtgat	2280
aagggctatg ta	agagaccct	ctttaagcgt	cgccgtgagt	tgccagatat	caattcgcgc	2340
aacttcaata tt	tcgtggttt	tgcggagcga	actgctatca	actcacctat	ccagggttcg	2400
gcagcagata tt	tctcaagat	tgccatgatt	cagctggata	aagccttggt	tgcaggtggt	2460
tatcagacta ao	gatgctgtt	acaagtgcac	gatgaaatcg	tccttgaagt	gcctaaatct	2520
gaattggtag ag	gatgaaaaa	attggtgaaa	caaaccatgg	aagaagccat	tcaactcagt	2580
gttcctctta to	cgcagatga	gaatgaaggg	gcaacctggt	acgaggctaa	a	2631

<210> 3

<211> 633

<212> DNA

<213> Streptococcus pneumoniae

<400> 3

atggggatgg cagcttttaa aaatcctaac aatcaataca aagctattac aattgctcaa actctaggtg atgatgcttc ttcagaggaa ttggctggta gatatggttc tgctgttcag 120 tgtacagaag tgactgcctc aaacctttca acagttaaaa ctaaagctac ggttgtagaa 180 aaaccactga aagattttag agcgtctacg tctgatcagt ctggttgggt ggaatctaat 240 300 ggtaaatggt atttctatga gtctggtgat gtgaagacag gttgggtgaa aacagatggt 360 aaatggtact atttgaatga cttaggtgtc atgcagactg gatttgtaaa attttctggt 420 agctggtatt acttgagcaa ttcaggtgct atgtttacag gctggggaac agatggtagc 480 agatggttct actttgacgg ctcaggagct atgaagacag gctggtacaa ggaaaatggc 540 acttggtatt accttgacga agcaggtatc atgaagacag gttggtttaa agtcggacca cactggtact atgcctacgg ttcaggagct ttggctgtga gcacaacaac accagatggt 600 633 taccgtgtaa atggtaatgg tgaatgggta aac

<210> 4

<211> 5568

<212> DNA

<213> Streptococcus pneumoniae

<400> 4

atgagccgaa aaagcattgg tgagaaacgc catagtttct cgatgagaaa gttgtcagtg 60 ggattggtat cagttactgt atctagtttc tttttgatga gtcaagggat tcaatcggta 120 teggeegata atatggaaag teeaatteat tataagtata tgaeegaggg taaattgaea 180 gacgaggaaa aatccttgct ggtagaggcc cttccacaac tggctgaaga atcagatgat 240 acttattact tggtttatag atctcaacag tttttaccga atacaggttt taacccaact 300 gttggtactt tcctttttac tgcaggattg agcttgttag ttttattggt ttctaaaagg 360 gaaaatggaa agaaacgact tgttcatttt ctgctgttga ctagcatggg agttcaattg 420 ttgccggcca gtgcttttgg gttgaccagc cagattttat ctgcctataa tagtcagctt 480 540 tctatcggag tcggggaaca tttaccagag cctctgaaaa tcgaaggtta tcaatatatt ggttatatca aaactaagaa acaggataat acagagcttt caaggacagt tgatgggaaa 600 660 tactctgctc aaagagatag tcaaccaaac tctacaaaaa catcagatgt agttcattca gctgatttag aatggaacca aggacagggg aaggttagtt tacaaggtga agcatcaggg 720 gatgatggac tttcagaaaa atcttctata gcagcagaca atctatcttc taatgattca 780 840 ttcgcaagtc aagttgagca gaatccggat cacaaaggag aatctgtagt tcgaccaaca gtgccagaac aaggaaatcc tgtgtctgct acaacggtgc agagtgcgga agaggaagta 900 960 ttggcgacga caaatgatcg accagagtat aaacttccat tggaaaccaa aggcacgcaa gaacccggtc atgagggtga agccgcagtc cgtgaagact taccagtcta cactaagcca 1020 ctagaaacca aaggtacaca aggacccgga catgaaggtg aagctgcagt tcgcgaggaa 1080 1140 gaaccagctt acacagaacc gttagcaacg aaaggcacgc aagagccagg tcatgagggc aaagctacag teegegaaga gaetetagag tacaeggaae eggtagegae aaaaggeaca 1200 caagaacccg aacatgaggg cgaagcggca gtagaagaag aacttccggc tttagaggtc 1260 actacacgaa atagaacgga aatccagaat attccttata caacagaaga aattcaggat 1320 ccaacacttc tgaaaaatcg tcgtaagatt gaacgacaag ggcaagcagg gacacgtaca 1380 attcaatatg aagactacat cgtaaatggt aatgtcgtag aaactaaaga agtgtcacga 1440 1500 actgaagtag ctccggtcaa cgaagtcgtt aaagtaggaa cacttgtgaa agttaaacct

acagtagaaa ttacaaac	tt aacaaaagtt	gagaacaaaa	aatctataac	tgtaagttat	1560
aacttaatag acactacc	tc agcatatgtt	tctgcaaaaa	cgcaagtttt	ccatggagac	1620
aagctagtta aagaggtg	ga tatagaaaat	cctgccaaag	agcaagtaat	atcaggttta	1680
gattactaca caccgtat	ac agttaaaaca	cacctaactt	ataatttggg	tgaaaataat	1740
gaggaaaata ctgaaaca	tc aactcaagat	ttccaattag	agtataagaa	aatagagatt	1800
aaagatattg attcagta	ga attatacggt	aaagaaaatg	atcgttatcg	tagatattta	1860
agtctaagtg aagcgccg	ac tgatacggct	aaatactttg	taaaagtgaa	atcagatcgc	1920
ttcaaagaaa tgtaccta	cc tgtaaaatct	attacagaaa	atacggatgg	aacgtataaa	1980
gtgacggtag ccgttgat	ca acttgtcgaa	gaaggtacag	acggttacaa	agatgattac	2040
acatttactg tagctaaa	tc taaagcagag	caaccaggag	tttacacatc	ctttaaacag	2100
ctggtaacag ccatgcaa	ag caatctgtct	ggtgtctata	cattggcttc	agatatgacc	2160
gcagatgagg tgagctta	gg cgataagcag	acaagttatc	tcacaggtgc	atttacaggg	2220
agcttgatcg gttctgat	gg aacaaaatcg	tatgccattt	atgatttgaa	gaaaccatta	2280
tttgatacat taaatggt	gc tacagttaga	gatttggata	ttaaaactgt	ttctgctgat	2340
agtaaagaaa atgtcgca	gc gctggcgaag	gcagcgaata	gcgcgaatat	taataatgtt	2400
gcagtagaag gaaaaatc	tc aggtgcgaaa	tctgttgcgg	gattagtagc	gagcgcaaca	2460
aatacagtga tagaaaac	ag ctcgtttaca	gggaaactta	tcgcaaatca	ccaggacagt	2520
aataaaaatg atactgga	gg aatagtaggt	aatataacag	gaaatagttc	gagagttaat	2580
aaagttaggg tagatgcc	tt aatctctact	aatgcacgca	ataataacca	aacagctgga	2640
gggatagtag gtagatta	ga aaatggtgca	ttgatatcta	attcggttgc	tactggagaa	2700
atacgaaatg gtcaagga	ta ttctagagtc	ggaggaatag	taggatctac	gtggcaaaac	2760
ggtcgagtaa ataatgtt	gt gagtaacgta	gatgttggag	atggttatgt	tatcaccggt	2820
gatcaatacg cagcagca	ga tgtgaaaaat	gcaagtacat	cagttgataa	tagaaaagca	2880
gacagattcg ctacaaaa	tt atcaaaagac	caaatagacg	cgaaagttgc	tgattatgga	2940
atcacagtaa ctcttgat	ga tactgggcaa	gatttaaaac	gtaatctaag	agaagttgat	3000
tatacaagac taaataaa	gc agaagctgaa	agaaaagtag	cttatagcaa	catagaaaaa	3060
ctgatgccat tctacaat	aa agacctagta	gttcactatg	gtaacaaagt	agcgacaaca	3120
gataaacttt acactaca	ga attgttagat	gttgtgccga	tgaaagatga	tgaagtagta	3180
acggatatta ataataag	aa aaattcaata	aataaagtta	tgttacattt	caaagataat	3240

acagtagaat	acctagatgt	aacattcaaa	gaaaacttca	taaacagtca	agtaatcgaa	3300
tacaatgtta	caggaaaaga	atatatattc	acaccagaag	catttgtttc	agactataca	3360
gcgataacga	ataacgtact	aagcgacttg	caaaatgtaa	cacttaactc	agaagctact	3420
aaaaaagtac	taggagcagc	gaatgatgca	gccttagata	acctatactt	agatagacaa	3480
tttgaagaag	ttaaagctaa	tatagcagaa	cacctaagaa	aagtattagc	gatggataaa	3540
tcaatcaata	ctacaggaga	cggtgtagtt	gaatacgtaa	gtgagaaaat	caaaaataac	3600
aaagaagcat	ttatgctagg	tcttacttat	atgaaccgtt	ggtacgatat	taattatggt	3660
aaaatgaata	caaaagattt	atctacgtac	aagtttgact	ttaacggaaa	taatgagact	3720
tcaacgttgg	atactattgt	cgcattagga	aatagtggac	tagataacct	gagagcttca	3780
aatactgtag	gtttatatgc	gaataaactt	gcatcggtaa	aaggagaaga	ttcagtcttt	3840
gacttcgtag	aagcgtatag	aaaactgttc	ttaccaaaca	aaacaaataa	cgagtggttt	3900
aaagaaaata	caaaggcata	tatagtcgaa	atgaagtctg	atattgcaga	agtacgagaa	3960
aaacaagaat	caccaacagc	cgatagaaaa	tattcattag	gagtttacga	tagaatatca	4020
gcaccaagtt	gggggcataa	gagtatgtta	ttaccactac	taactttacc	tgaagaatct	4080
gtgtatattt	catcgaatat	gtctacactt	gcattcggtt	cgtatgaaag	atatcgtgat	4140
agtgtggatg	gagttattct	ttcaggagat	gctttacgaa	cttatgtaag	aaatagagtt	4200
gatatagcag	cgaaaaggca	tagagaccat	tatgatattt	ggtacaatct	tcttgacagt	4260
gcttcaaaag	aaaaactttt	ccgttctgtg	atagtttatg	atggattcaa	tgtaaaagat	4320
gagacaggaa	gaacttattg	ggcaaggtta	acggataaaa	acatcggctc	tattaaagaa	4380
ttcttcggac	ctgttgggaa	atggtatgag	tataatagta	gtgcaggagc	gtatgcgaat	4440
ggaagtttaa	cgcactttgt	gttagataga	ttattagatg	cttatggaac	gtcggtttat	4500
actcatgaaa	tggttcataa	ttctgattct	gcaatctact	ttgaaggaaa	tggtagacgt	4560
gaaggattgg	gagcggagtt	atacgcactt	ggtttactgc	aatctgtaga	tagtgtaaat	4620
tctcatattt	tagctttaaa	tacgttatat	aaagcagaaa	aagatgattt	gaatagattg	4680
catacatata	atccggtgga	acgtttcgat	tcggatgagg	cgcttcaaag	ttatatgcat	4740
ggatcatatg	atgtaatgta	tacacttgat	gcgatggaag	caaaagcgat	attagctcaa	4800
aataatgatg	ttaagaaaaa	atggtttaga	aaaatagaaa	attattacgt	tcgtgatact	4860
agacataata	aagatacaca	tgcaggaaat	aaagtccgtc	cattaacaga	tgaagaagta	4920

gctaacttaa	catcgttaaa	ctcattaatc	gacaacgaca	tcataaatag	acgtagctat	4980
gatgatagta	gagaatataa	acgaaatggc	tactatacta	taagtatgtt	ctctcctgta	5040
tacgcagcgc	taagcaattc	gaaaggtgct	cctggagata	ttatgtttag	aaaaatagct	5100
tatgaattac	ttgcggaaaa	aggttatcac	aaaggattcc	taccttatgt	ttctaatcag	5160
tacggagcag	aagcatttgc	cagcggaagc	aaaacattct	catcatggca	tggaagagat	5220
gttgctttag	tgacagatga	tttagtattt	aagaaagtat	tcaatggtga	gtactcatca	5280
tgggctgatt	tcaaaaaagc	aatgtttaaa	caacgtatag	ataaacaaga	taatctgaaa	5340
ccaataacaa	ttcaatacga	attaggtaat	cctaatagta	caaaagaagt	aactataaca	5400
acggctgcac	aaatgcaaca	attaattaat	gaagcggctg	cgaaagatat	tactaatata	5460
gatcgtgcaa	cgagtcatac	cccagcaagt	tgggtgcatt	tattaaaaca	aaaaatctat	5520
aatgcatatc	ttcgcactac	agatgacttt	agaaattcta	tatataaa		5568

<210> 5

<211> 2571

<212> DNA

<213> Streptococcus pneumoniae

## <400> 5

atgaaattca atccaaatca aagatatact cgttggtcta ttcgccgtct cagtgtcggt gttgcctcag ttgttgtggc tagtggcttc tttgtcctag ttggtcagcc aagttctgta 120 180 cgtgccgatg ggctcaatcc aaccccaggt caagtcttac ctgaagagac atcgggaacg 240 aaagagggtg acttatcaga aaaaccagga gacaccgttc tcactcaagc gaaacctgag 300 ggcgttactg gaaatacgaa ttcacttccg acacctacag aaagaactga agtgagcgag gaaacaagcc cttctagtct ggatacactt tttgaaaaaag atgaagaagc tcaaaaaaaat 360 ccagagctaa cagatgtctt aaaagaaact gtagatacag ctgatgtgga tgggacacaa 420 gcaagtccag cagaaactac tcctgaacaa gtaaaaggtg gagtgaaaga aaatacaaaa 480 gacagcateg atgtteetge tgettatett gaaaaagetg aagggaaagg teettteaet 540 gccggtgtaa accaagtaat tccttatgaa ctattcgctg gtgatggtat gttaactcgt 600 660 ctattactaa aagcttcgga taatgctcct tggtctgaca atggtactgc taaaaatcct 720 gctttacctc ctcttgaagg attaacaaaa gggaaatact tctatgaagt agacttaaat 780 ggcaatactg ttggtaaaca aggtcaagct ttaattgatc aacttcgcgc taatggtact 840 

aatctagttg	ctactaaaaa	tgtagacatc	aacatcaatg	gattagttgc	taaagaaaca	
gttcaaaaag	ccgttgcaga	caacgttaaa	gacagtatcg	atgttccagc	agcctaccta	
gaaaaagcca	agggtgaagg	tccattcaca	gcaggtgtca	accatgtgat	tccatacgaa	
ctcttcgcag	gtgatggcat	gttgactcgt	ctcttgctca	aggcatctga	caaggcacca	
tggtcagata	acggcgacgc	taaaaaccca	gccctatctc	cactaggcga	aaacgtgaag	
accaaaggtc	aatacttcta	tcaagtagcc	ttggacggaa	atgtagctgg	caaagaaaaa	:
caagcgctca	ttgaccagtt	ccgagcaaat	ggtactcaaa	cttacagcgc	tacagtcaat	:
gtctatggta	acaaagacgg	taaaccagac	ttggacaaca	tcgtagcaac	taaaaaagtc	
actattaaca	taaacggttt	aatttctaaa	gaaacagttc	aaaaagccgt	tgcagacaac	
gttaaagaca	gtatcgatgt	tccagcagcc	tacctagaaa	aagccaaggg	tgaaggtcca	:
ttcacagcag	gtgtcaacca	tgtgattcca	tacgaactct	tcgcaggtga	tggtatgttg	:
actcgtctct	tgctcaaggc	atctgacaag	gcaccatggt	cagataacgg	tgacgctaaa	
aacccagccc	tatctccact	aggtgaaaac	gtgaagacca	aaggtcaata	cttctatcaa	
ttagccttgg	acggaaatgt	agctggcaaa	gaaaaacaag	cgctcattga	ccagttccga	
gcaaacggta	ctcaaactta	cagcgctaca	gtcaatgtct	atggtaacaa	agacggtaaa	
ccagacttgg	acaacatcgt	agcaactaaa	aaagtcacta	ttaacataaa	cggtttaatt	
tctaaagaaa	cagttcaaaa	agccgttgca	gacaacgtta	aggacagtat	cgatgttcca	
gcagcctacc	tagaaaaggc	caagggtgaa	ggtccattca	cagcaggtgt	caaccatgtg	
attccatacg	aactcttcgc	aggtgatggc	atgttgactc	gtctcttgct	caaggcatct	
gacaaggcac	catggtcaga	taacggcgac	gctaaaaacc	cagctctatc	tccactaggt	
gaaaacgtga	agaccaaagg	tcaatacttc	tatcaagtag	ccttggacgg	aaatgtagct	:
ggcaaagaaa	aacaagcgct	cattgaccag	ttccgagcaa	acggtactca	aacttacagc	:
gctacagtca	atgtctatgg	taacaaagac	ggtaaaccag	acttggacaa	catcgtagca	:
actaaaaaag	tcactattaa	gataaatgtt	aaagaaacat	cagacacagc	aaatggttca	:
ttatcacctt	ctaactctgg	ttctggcgtg	actccgatga	atcacaatca	tgctacaggt	:
actacagata	gcatgcctgc	tgacaccatg	acaagttcta	ccaacacgat	ggcaggtgaa	2
aacatggctg	cttctgctaa	caagatgtct	gatacgatga	tgtcagagga	taaagctatg	:
ctaccaaata	ctggtgagac	tcaaacatca	atggcaagta	ttggtttcct	tgggcttgcg	:
cttgcaggtt	tactcggtgg	tctaggtttg	aaaaacaaaa	aagaagaaaa	С	:

<210> 6 <211> 585 <212> DNA <213> Streptococcus pneumoniae <400> atgaaatcaa taactaaaaa gattaaagca actcttgcag gagtagctgc cttgtttgca gtatttgctc catcatttgt atctgctcaa gaatcatcaa cttacactgt taaagaaggt gatacacttt cagaaatcgc tgaaactcac aacacaacag ttgaaaaatt ggcagaaaac aaccacattg ataacattca tttgatttat gttgatcaag agttggttat cgatggccct gtagcgcctg ttgcaacacc agcgccagct acttatgcgg caccagccgc tcaagatgaa actgtttcag ctccagtagc agaaactcca gtagtaagtg aaacagttgt ttcaactgta agcggatctg aagcagaagc caaagaatgg atcgctcaaa aagaatcagg tggtagctat acagctacaa atggacgtta tatcggacgt taccaattaa cagattcata cctgaacggt gactactcag ctgaaaacca agaacgtgta gcagatgcct acgttgcagg acgttacggt tcatggactg ctgctaaaaa cttctggctt aacaatggct ggtat <210> 7 <211> 2232 <212> DNA <213> Streptococcus pneumoniae <400> atgaataaga aaaaaatgat tttaacaagt ctagccagcg tcgctatctt aggggctggt

tttgttacgt ctcagcctac ttttgtaaga gcagaagaat ctccacaagt tgtcgaaaaa 120 tetteattag agaagaaata tgaggaagea aaageaaaag etgataetge caagaaagat 180 tacgaaacgg ctaaaaagaa agcagaagac gctcagaaaa agtatgaaga tgatcagaag 240 300 agaactgagg agaaagctcg aaaagaagca gaagcatctc aaaaattgaa tgatgtggcg cttgttgttc aaaatgcata taaagagtac cgagaagttc aaaatcaacg tagtaaatat 360 aaatctgacg ctgaatatca gaaaaaatta acagaggtcg actctaaaat agagaaggct 420 480 aggaaagagc aacaggactt gcaaaataaa tttaatgaag taagagcagt tgtagttcct 540 gaaccaaatg cgttggctga gactaagaaa aaagcagaag aagctaaagc agaagaaaaa 600 gtagctaaga gaaaatatga ttatgcaact ctaaaggtag cactagcgaa gaaagaagta gaggctaagg aacttgaaat tgaaaaactt caatatgaaa tttctacttt ggaacaagaa 660

120

180

240

300

360

420

480

540

585

gttgctactg	ctcaacatca	agtagataat	ttgaaaaaac	ttcttgctgg	tgcggatcct	720
gatgatggca	cagaagttat	agaagctaaa	ttaaaaaaag	gagaagctga	gctaaacgct	780
aaacaagctg	agttagcaaa	aaaacaaaca	gaacttgaaa			